

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (canceled)

1 Claim 2 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signals  
4 using a physical characteristic of the signals.

1 Claim 3 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signals  
4 using a bandpass frequency filter.

1 Claim 4 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signals  
4 using a signal amplitude threshold.

1 Claim 5 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signals  
4 using a signal-to-noise threshold.

1 Claim 6 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signals  
4 using an angle of arrival threshold.

1 Claim 7 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals

3 emanating from the object, includes screening the signals  
4 using a relative time of arrival threshold.

1 Claim 8 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signal  
4 using information carried by the signals.

1 Claim 9 (currently amended): The method of claim 33 ±  
2 wherein the act of accepting at an observation point,  
3 signals emanating from the object, includes screening the  
4 signal using a unique identifier carried by the signals and  
5 associated with the object.

1 Claim 10 (currently amended): The method of claim 33 ±  
2 wherein the act accepting at an observation point, signals  
3 emanating from the object, includes screening the signal  
4 using both (A) a physical characteristic of the signals,  
5 and (B) information carried by the signals.

1 Claim 11 (currently amended): The method of claim 33 ±  
2 further comprising determining, for each of the accepted  
3 signals, (A) an associated time of arrival, and (B) an  
4 amplitude.

1 Claim 12 (currently amended): The method of claim 33 ±  
2 wherein the topographical information includes sources of  
3 signal reflection.

1 Claim 13 (currently amended): The method of claim 33 ±  
2 wherein the topographical information includes sources of  
3 signal diffraction.

1 Claim 14 (currently amended): The method of claim 33 ±  
2 wherein the topographical information includes building  
3 surfaces.

1 Claim 15 (currently amended): The method of claim 33 ±  
2 wherein the topographical information includes signal  
3 attenuation information.

1 Claim 16 (currently amended): The method of claim 33 54  
2 wherein the act of determining a set of final candidate  
3 locations from the determined candidate locations includes  
4 eliminating at least some of the candidate locations using  
5 times of arrival associated with the signals from which  
6 trace-back rays were determined.

1 Claim 17 (original): The method of claim 16 wherein a  
2 candidate location is eliminated if the times of arrival  
3 are inconsistent with expected times of arrival.

1 Claim 18 (original): The method of claim 17 wherein a time  
2 of arrival is determined to be inconsistent with an  
3 expected time of arrival if they differ by more than a  
4 threshold difference.

1 Claim 19 (currently amended): The method of claim 33 54  
2 wherein the act of determining a set of final candidate  
3 locations from the determined candidate locations includes  
4 eliminating at least some of the candidate locations using  
5 amplitudes associated with the signals from which  
6 trace-back rays were determined.

1 Claim 20 (original): The method of claim 19 wherein a  
2 candidate location is eliminated if the amplitudes are  
3 inconsistent with expected amplitudes.

1 Claim 21 (original): The method of claim 19 wherein an  
2 amplitude is determined to be inconsistent with an expected  
3 amplitude if they differ by more than a threshold  
4 difference.

1 Claim 22 (currently amended): The method of claim 33 54  
2 wherein the act of determining a set of final candidate  
3 locations from the determined candidate locations includes  
4 eliminating at least some of the candidate locations using  
5 both times of arrival and amplitudes associated with the  
6 signals from which trace-back rays were determined.

1 Claim 23 (currently amended): The method of claim 33 54  
2 wherein the act of determining a set of final candidate  
3 locations from the determined candidate locations includes  
4 i) determining if times of arrival of each of  
5 the accepted signals are inconsistent with  
6 expected times of arrival;  
7 ii) if it was determined that the times of  
8 arrival are inconsistent with expected times of  
9 arrival, then excluding the candidate location  
10 from the set of final candidate locations; and  
11 iii) if it was determined that the times of  
12 arrival are not inconsistent with expected times  
13 of arrival, then  
14 A) determining if amplitudes of each of the  
15 accepted signals are inconsistent with  
16 expected amplitudes, and

17                   B) if it was determined that the amplitudes  
18                   are inconsistent with expected amplitudes,  
19                   then excluding the candidate location from  
20                   the set of final candidate locations.

Claim 24 (canceled)

1   Claim 25 (currently amended): The method of claim 26 ~~24~~  
2   wherein the area of accuracy is a circle of accuracy.

1   Claim 26 (currently amended): A method for locating an  
2   object of interest, the method comprising:  
3       a) accepting at an observation point, signals  
4       emanating from the object;  
5       b) determining, for each of the accepted signals, a  
6       direction of arrival;  
7       c) determining at least two trace-back rays from the  
8       observation point using solely the direction of  
9       arrival of signals and topographical information;  
10      d) determining at least one candidate location at  
11      crossings of two or more trace-back rays;  
12      e) determining a set of final candidate locations  
13      from the determined candidate locations; and  
14      f) determining the location of the object of interest  
15      using the set of final candidate locations, wherein  
16      the act of determining the location of the object of  
17      interest using the set of final candidate locations  
18      includes  
19              i) defining an area of accuracy including at  
20              least one candidate location from the set of  
21              final candidate locations, and

22            ii) determining the location of the object of  
23            interest using the defined area of accuracy,  
24 ~~The method of claim 24~~ wherein at least two areas of  
25 accuracy are defined, and  
26            wherein the act of determining the location of the  
27 object of interest uses a cardinality of each of the areas  
28 of accuracy.

1    Claim 27 (currently amended): A method for locating an  
2    object of interest, the method comprising:

- 3            a) accepting at an observation point, signals  
4            emanating from the object;  
5            b) determining, for each of the accepted signals, a  
6            direction of arrival;  
7            c) determining at least two trace-back rays from the  
8            observation point using solely the direction of  
9            arrival of signals and topographical information;  
10           d) determining at least one candidate location at  
11           crossings of two or more trace-back rays;  
12           e) determining a set of final candidate locations  
13           from the determined candidate locations; and  
14           f) determining the location of the object of interest  
15           using the set of final candidate locations, wherein  
16           the act of determining the location of the object of  
17           interest using the set of final candidate locations  
18           includes  
19                i) defining an area of accuracy including at  
20                least one candidate location from the set of  
21                final candidate locations, and  
22                ii) determining the location of the object of  
23                interest using the defined area of accuracy,

24 ~~The method of claim 24~~ wherein at least two areas of  
25 accuracy are defined, and  
26 wherein the act of determining the location of the  
27 object of interest includes  
28 A) defining at least one cluster, each cluster  
29 including locations of each of at least two areas  
30 of accuracy, and  
31 B) determining the location of the object of  
32 interest using the at least one cluster.

1 Claim 28 (original): The method of claim 27 wherein the  
2 act of determining the location of the object of interest  
3 uses a location of the at least one cluster.

1 Claim 29 (original): The method of claim 27 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having an associated diameter and  
4 wherein the act of determining the location of the  
5 object of interest uses the diameter of each of the at  
6 least two clusters.

1 Claim 30 (original): The method of claim 27 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having an associated cluster cardinality, and  
4 wherein the act of determining the location of the  
5 object of interest uses the cluster cardinality of each of  
6 the at least two clusters.

1 Claim 31 (original): The method of claim 27 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having both an associated diameter and an  
4 associated cluster cardinality, and

5        wherein the act of determining the location of the  
6 object of interest uses the cluster cardinality and the  
7 diameter of each of the at least two clusters.

1 Claim 32 (original): The method of claim 27 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having

- 4        - associated areas of accuracy, each of the
- 5        associated areas of accuracy having a cardinality,
- 6        - an associated diameter, and
- 7        - an associated cluster cardinality, and

8        wherein the act of determining the location of the  
9 object of interest uses

- 10       - the cardinalities of the areas of accuracy
- 11       associated with each of the at least two clusters,
- 12       - the diameters associated with each of the at least
- 13       two clusters, and
- 14       - the cluster cardinalities associated with each of
- 15       the at least two clusters.

1 Claim 33 (currently amended): A method for locating an  
2 object of interest, the method comprising:

- 3       a) accepting at an observation point, signals
- 4       emanating from the object;
- 5       b) determining, for each of the accepted signals, a
- 6       direction of arrival;
- 7       c) determining at least two trace-back rays from the
- 8       observation point using solely the direction of
- 9       arrival of signals and topographical information;
- 10       d) determining at least one candidate location at
- 11       crossings of two or more trace-back rays;



12        e) determining a set of final candidate locations  
13        from the determined candidate locations; and  
14        f) determining the location of the object of interest  
15        using the set of final candidate locations,  
16        ~~The method of claim 54~~ wherein the act of determining  
17        the location of the object of interest using the set  
18        of final candidate locations includes  
19            i) defining a volume of accuracy including at  
20            least one candidate location from the set of  
21            final candidate locations, and  
22            ii) determining the location of the object of  
23            interest using the defined volume of accuracy.

1    Claim 34 (original): The method of claim 33 wherein the  
2    volume of accuracy is a sphere of accuracy.

1    Claim 35 (original): The method of claim 33 wherein at  
2    least two volumes of accuracy are defined, and  
3        wherein the act of determining the location of the  
4    object of interest uses a cardinality of each of the  
5    volumes of accuracy.

1    Claim 36 (original): The method of claim 33 wherein at  
2    least two volumes of accuracy are defined, and  
3        wherein the act of determining the location of the  
4    object of interest includes  
5            A) defining at least one cluster, each cluster  
6            including locations of each of at least two  
7            volumes of accuracy, and  
8            B) determining the location of the object of  
9            interest using the at least one cluster.

1 Claim 37 (original): The method of claim 36 wherein the  
2 act of determining the location of the object of interest  
3 uses a location of the at least one cluster.

1 Claim 38 (original): The method of claim 36 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having an associated diameter and  
4 wherein the act of determining the location of the  
5 object of interest uses the diameter of each of the at  
6 least two clusters.

1 Claim 39 (original): The method of claim 36 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having an associated cluster cardinality, and  
4 wherein the act of determining the location of the  
5 object of interest uses the cluster cardinality of each of  
6 the at least two clusters.

1 Claim 40 (original): The method of claim 36 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having both an associated diameter and an  
4 associated cluster cardinality, and  
5 wherein the act of determining the location of the  
6 object of interest uses the cluster cardinality and the  
7 diameter of each of the at least two clusters.

1 Claim 41 (original): The method of claim 36 wherein at  
2 least two clusters are defined, each of the at least two  
3 clusters having  
4 - associated volumes of accuracy, each of the  
5 associated volumes of accuracy having a cardinality,  
6 - an associated diameter, and

7       - an associated cluster cardinality, and  
8       wherein the act of determining the location of the  
9       object of interest uses  
10       - the cardinalities of the volumes of accuracy  
11       associated with each of the at least two clusters,  
12       - the diameters associated with each of the at least  
13       two clusters, and  
14       the cluster cardinalities associated with each of the at  
15       least two clusters

Claims 42-55 (canceled)

1       Claim 56 (new): Apparatus for locating an object of  
2       interest, the apparatus comprising:  
3       a) means for accepting at an observation point,  
4       signals emanating from the object;  
5       b) means for determining, for each of the accepted  
6       signals, a direction of arrival;  
7       c) means for determining at least two trace-back rays  
8       from the observation point using solely the direction  
9       of arrival of signals and topographical information;  
10       d) means for determining at least one candidate  
11       location at crossings of two or more trace-back rays;  
12       e) means for determining a set of final candidate  
13       locations from the determined candidate locations; and  
14       f) means for determining the location of the object  
15       of interest using the set of final candidate  
16       locations, wherein the means for determining the  
17       location of the object of interest using the set of  
18       final candidate locations include

19           i) means for defining an area of accuracy  
20           including at least one candidate location from  
21           the set of final candidate locations, and  
22           ii) means for determining the location of the  
23           object of interest using the defined area of  
24           accuracy,  
25       wherein at least two areas of accuracy are defined,  
26   and  
27       wherein the means for determining the location of the  
28   object of interest use a cardinality of each of the areas  
29   of accuracy.

1   Claim 57 (new): Apparatus for locating an object of  
2   interest, the apparatus comprising:  
3       a) means for accepting at an observation point,  
4       signals emanating from the object;  
5       b) means for determining, for each of the accepted  
6       signals, a direction of arrival;  
7       c) means for determining at least two trace-back rays  
8       from the observation point using solely the direction  
9       of arrival of signals and topographical information;  
10      d) means for determining at least one candidate  
11      location at crossings of two or more trace-back rays;  
12      e) means for determining a set of final candidate  
13      locations from the determined candidate locations; and  
14      f) means for determining the location of the object  
15      of interest using the set of final candidate  
16      locations, wherein the means for determining the  
17      location of the object of interest using the set of  
18      final candidate locations include

19           i) means for defining an area of accuracy  
20           including at least one candidate location from  
21           the set of final candidate locations, and  
22           ii) means for determining the location of the  
23           object of interest using the defined area of  
24           accuracy,  
25       wherein at least two areas of accuracy are defined,  
26   and  
27       wherein the means for determining the location of the  
28   object of interest include  
29           A) means for defining at least one cluster, each  
30           cluster including locations of each of at least  
31           two areas of accuracy, and  
32           B) means for determining the location of the  
33           object of interest using the at least one  
34           cluster.

1   Claim 59 (new): Apparatus for locating an object of  
2   interest, the apparatus comprising:  
3       a) means for accepting at an observation point,  
4       signals emanating from the object;  
5       b) means for determining, for each of the accepted  
6       signals, a direction of arrival;  
7       c) means for determining at least two trace-back rays  
8       from the observation point using solely the direction  
9       of arrival of signals and topographical information;  
10      d) means for determining at least one candidate  
11      location at crossings of two or more trace-back rays;  
12      e) means for determining a set of final candidate  
13      locations from the determined candidate locations; and  
14      f) means for determining the location of the object  
15      of interest using the set of final candidate

16 locations, wherein the means for determining the  
17 location of the object of interest using the set of  
18 final candidate locations include  
19 i) means for defining a volume of accuracy  
20 including at least one candidate location from  
21 the set of final candidate locations, and  
22 ii) means for determining the location of the  
23 object of interest using the defined volume of  
24 accuracy.